



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

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OFFICE OF
ENVIRONMENTAL
CLEANUP

October 16, 2017

Mr. Marc Connally
92 CES/CEVR
100 West Ent Street, Suite 155
Fairchild AFB, Washington 99011

Re: Draft Action Memorandum for a Time-Critical Removal Action Treatment of PFOS- and PFOA-Contaminated Water in Residential Wells near Fairchild Air Force Base, Washington, September 2017

Dear Mr. Connally:

Thank you for the opportunity to review the above referenced Action Memorandum for Time-Critical Removal Action (TCRA) for treatment of perfluorooctanesulfonic acid (PFOS)- and perfluorooctane sulfonic acid (PFOA)-contaminated water in residential wells near Fairchild Air Force Base. This Action Memorandum appears adequate for the TCRA and is consistent with our Superfund Removal Guidance for preparing Action Memorandum (September 2009). We have provided a few comments below that would improve the clarity of the document and minimize the potential for further back-and-forth discussions and subsequent delays in finalizing the memorandum.

- 1) Section II (B) discusses previous poly- and perfluoroalkyl Substances (PFASs) actions conducted to date; however, formal references to documents related to the previous actions are not provided. Please revise the Action Memorandum to provide formal references to all previous PFAS actions conducted at Fairchild Air Force Base as well as any additional information or documents related to the additional on- and off-base sampling of monitoring wells, residential wells, and/or municipal wells.
- 2) Section III (A) - The paragraph discussing the health effects of PFOS at the bottom of page 6 and top of page 7 should be deleted. This discussion, which appears to be specific to PFOS alone, appears inconsistent with the overall basis for the TCRA, which addresses both PFOA and PFOS. Further, the language in this paragraph is directly contradicted by EPA's health advisory for PFOS, which states that "human epidemiology data report associations between PFOS exposure and high cholesterol, thyroid disease, immune suppression, and some reproductive and developmental parameters, including reduced fertility and fecundity." The epidemiological database is substantial rather than limited. The candidate RfD for low birth weight represents the endpoint selected for PFOS; thus, the claim here that such effects are associated with exposures in "the ppm range" is directly contradicted. Section 4 of the Action Memorandum determines PFOA and PFOS to be CERCLA contaminants, and further concludes that exposures at concentrations greater than the Health Advisory (HA) of 70 ng/L represent an imminent and substantial endangerment to human health. Such a determination represents a sufficient basis for the TCRA and further discussion on the nature of the database on health effects for PFOA and/or PFOS would only serve to present potential delays in our approval of the memorandum.
- 3) Section V (A) (3) Applicable or Relevant and Appropriate Requirements (ARARS) should include the Safe Drinking Water Act (SDWA) since the HAs are developed as part of the

SDWA. It requires of EPA to publish a list of unregulated contaminants every 5 years that are not subject to any proposed or promulgated national primary drinking water regulations, are known or anticipated to occur in public water systems, and might require regulation under the SDWA. As part of this, every 5 years EPA publishes a list of unregulated contaminants that will be monitored by drinking water systems, known as the unregulated contaminant monitoring rule (UCMR). PFOS and PFOA were listed in UCMR 3.

- 4) Section V (B) - The Action Memorandum discusses the need for long-term operations and maintenance (O&M) of the treatment systems including performance sampling to ensure the systems are effective in removal of PFOS and PFOA to concentrations below the HA levels.
 - a. We would strongly recommend that the sampling and quality assurance plans list all of the PFASs that will be laboratory-analyzed and reported as part of performance monitoring and describe how the reported results will be used to evaluate the need for granular activated carbon (GAC) change-out. It should be noted that the June 6, 2017 Environmental Science & Technology publication Sorption of Poly- and Perfluoroalkyl Substances (PFASs) Relevant to Aqueous Film-Forming Foam (AFFF)-Impacted Groundwater by Biochars and Activated Carbon recommends breakthrough monitoring for shorter-chain PFASs in addition to PFOS/PFOA to ensure greater protection from potential exposure to PFASs. This is due to observations that many shorter-chain polyfluorinated compounds (PFCs) were predicted to breakthrough GAC sorption systems before PFOA and PFOS by thousands of bed volumes. Thus, it appears that evaluation of shorter-chain PFC concentration trends over time, along with monitoring of PFOS and PFOA concentrations, may be appropriate for performance monitoring and for determining whether GAC change-out is warranted.
 - b. The sampling and quality assurance plans should substantiate the basis for reducing performance monitoring from quarterly the first year to semi-annual in subsequent years and how this supports change-out of the GAC unit to ensure ongoing protectiveness of human health.
 - c. The sampling and quality assurance plans should provide information regarding carbon usage for the GAC units. For example, information such as curves supporting mass loading at HA breakthrough, curves supporting PFOS mass loaded at HA breakthrough, and PFOS and PFOA calculations which support the carbon usage estimations are provided in Appendix E of the Conceptual Design Report for PFAS Response for Residential Wells, Fairchild Air Force Base, Washington, dated July 19, 2017 (Conceptual Design Report).

I understand the urgency for prompt action to install the treatment systems as soon as possible. If you have any questions or concerns about our comments, please do not hesitate to contact me at prestbo.kim@epa.gov or 206-553-0239.

Sincerely,

Kimberly M. Prestbo

Kimberly M. Prestbo
Remedial Project Manager
Site Cleanup Unit #1
Remedial Cleanup Program

cc: Kurt Lee, AFCEC
Hun Seak Park
Washington Department of Ecology